

HEALTH RISK ASSESSMENT OF THE CONSUMPTION OF GEOPHAGY CLAY FROM MOWE AND IKORODU MARKETS, SOUTHWESTERN NIGERIA

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ABSTRACT

In recent times, health risk associated with trace elements present in geophagic materials has drawn the attention of medical geologists due to the associated health risk. This study was aimed at determining the heavy metal concentration and health risk associated with the consumption of geophagy clay sold in Ikorodu and Mowe markets in Lagos, southwestern Nigeria.

Samples of geophagy clay were bought from Ikorodu and Mowe markets; mineralogy of representative samples were determined by X-Ray diffraction (XRD), trace elemental concentration was determined using Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP-AES), and the health risk assessment was carried out using Hazard Quotient (HQ) and Total Hazard Index (THI).

XRD results revealed that the major minerals in the geophagy samples are quartz and kaolinite while the accessory minerals are anatase, halite, pyrite, goethite, smectite and palygorskite. The trace elemental concentration (ppm) of geophagy samples from Mowe market revealed Ba, Co, Cr, Cu and Mn ranged 90-270, 1-18, 107-114, 4-9 and 18-580 respectively. For samples from Ikorodu market; Ba, Co, Cr, Cu and Mn ranged 110-240, 1-16, 97-122, 4-8 and 18-519 respectively HQ values are all below 1 which indicates samples poses no risk to human health. The THI for child and adult for samples from the markets ranges from 1.00-2.00 and 1.00-1.10 and this indicates low to moderate health exposure.

In conclusion, the results showed that the concentration of the heavy metals in geophagy samples from Mowe and Ikorodu markets vary significantly. HQ and THI values for child and adult revealed that Pb has the highest concentration followed by Mn and Cr. The hazard quotient of all the metals is below 1 except for Mn which is above 1 and this indicate low risk to human health. THI values for both child and adult are above 1 and pose some risk to human health.